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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/392,722	09/09/1999	TOSHIYA AKAMATSU	950637B	1679

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EXAMINER

GRAYBILL, DAVID E

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 02/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/392,722

Applicant(s)

AKAMATSU ET AL.

Examiner

David E Graybill

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-21, 25, 26 and 37-41 is/are pending in the application.
- 4a) Of the above claim(s) 17-21, 25 and 36-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention.

The amendment filed 9-9-99 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. The added material which is not supported by the original disclosure is the amendment to page 15, last line.

The amendment filed 12-26-00 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. The added material which is not supported by the original disclosure is the claim 39 limitation "through the first and second masks."

The amendment filed 12-14-01 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. The added material which is not supported by the original disclosure is the amendment at page 15, line 14.

Applicant is required to cancel the new matter in the reply to this Office Action.

Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application. Applicant is required to provide the support in the original disclosure for the amendment filed 12-14-01, at page 15, line 14.

Claims 39-41 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

The non-described subject matter is the claim 39 limitation, "through first and second masks."

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 39-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 39 there is insufficient literal antecedent basis for the limitation "first and second masks."

Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Behun (5147084) and Hideshima (5143865).

At column 3, line 63 to column 4, line 62, Behun teaches the following:

39. A method for fabricating an integrated electronic device having an electric connection connecting a first electrode of a first substrate with a second electrode of a second substrate, surfaces of the second electrodes having adhesive tendencies to molten metal, the method comprising the steps of: forming first 18 and second 13 soldering metal bumps on the surfaces of the first 12 and second 17 electrodes by depositing second soldering metals through a mask, a melting temperature of the first soldering metal bump being higher than a melting temperature of the second soldering metal bump; aligning the first and second soldering metal bumps to each other, and then keeping both in contact with each other; and heating the first and second soldering metal bumps to melt the second soldering metal bump at a connection temperature lower than the melting temperature of the first soldering metal bump and solidifying the second soldering metal to form an electric connection between the first and second electrodes.

41. A method for fabricating an integrated electronic device according to 39, wherein the first and second soldering metal bumps essentially consist of an alloy of Pb and Sn, wherein Pb is contained less in the first soldering metal bump than in the second soldering metal bump.

To further clarify the teaching of depositing the second soldering metals through a mask, as cited, Behun teaches that the second soldering metal is screened, and the use of a mask is inherent in a process of screening.

However, Behun does not appear to explicitly teach that the first electrode has repellant tendencies to molten metal, a first mask, or the following:

40. A method for fabricating an integrated electronic device according to 39, wherein the surfaces of the first and second electrodes are made of Al and Cu, Au, Ag or Sn, respectively.

Nonetheless, at column 1, lines 31-68; and column 2, lines 39-43, Hideshima teaches a process wherein an electrode 5 has repellant tendencies to molten metal, a mask, and wherein the surface of an electrode is made of Al (as disclosed at column 1, lines 57-68; and column 2, lines 39-43) or Cu. Moreover, it would have been obvious to combine the process of Hideshima with the process of Behun because it would provide the first electrodes and facilitate provision of the second electrodes.

Applicant's amendment and remarks filed 12-14-01 are addressed in the rejection supra and are further addressed infra.

Applicant argues that application 08/504,080 provides support for the amendment to page 15, last line because, "The copy of the present application is identical with that of U. S. Serial No. 08/504,080." This argument is respectfully traversed because neither the original disclosure of the instant application nor application 08/504,080 provide support for the amendment. In particular, applicant alleges that original claim 23 in the instant application and the identical original claim 23 in application 08/504,080 provide support for the amendment. However, this allegation is respectfully traversed because the instant original (and presently canceled) claim 23 and the original claim 23 in 08/504,080 depend on the original claim 21 in the instant application and the original claim 21 in 08/504,080, respectively, and there is no support in the original claim 21 or elsewhere in the disclosure of either application for the amendment to page 15, last line. Furthermore, applicant contends that the dependency of the instant original claim 23 is "an obvious clerical error" because, "claim 21 does not have 'the first metal' as recited in claim 22, whereas claim 22 does require the first metal." This contention is deemed to be unpersuasive because this apparent lack of literal antecedent basis in claims 21 and 23 engenders claim construction considerations in addition to and beyond mere

"obvious clerical error" especially in light of the lack of support elsewhere for the amendment to page 15, last line, and applicant's failure to correct the alleged obvious error in the instant application.

Also, applicant cites specification sections to support the instant claim limitation, "first and second masks." However, the citations are respectfully deemed to be unsupportive because they are directed to a non-elected embodiment of the instant invention that is not encompassed by the scope of the instant claims.

In addition, applicant proffers, "The mere fact that Hideshima may disclose an electrode having repellant tendencies to molten metal would not have motivated one of ordinary skill in the art to modify Behun so that one electrode has adhesive tendencies and the other electrode has repellent tendencies." This proffer is respectfully deemed to be unpersuasive because the mere fact that Hideshima may disclose an electrode having repellant tendencies to molten metal is not relied on for motivation of one of ordinary skill in the art to modify Behun so that one electrode has adhesive tendencies and the other electrode has repellent tendencies. Instead, the motivation to combine the applied prior art is explicitly and clearly stated; namely, "it would have been obvious to combine the process of

Hideshima with the process of Behun because it would provide first electrodes." Indeed, it is well established that the selection of an art recognized element based on its suitability for its intended use supports a prima facie obviousness determination. See MPEP 2144.07, in particular, *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945); and *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious); *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment). Therefore, to paraphrase *In re Leshin supra*, selection of the electrode of Hideshima to make an integrated circuit device of a type made of electrodes as taught by Behun would have been obvious.

This Office action has an attached requirement for information under 37 CFR 1.105. A complete reply to this Office action must include a complete reply to the attached requirement for information. The time period for reply to the attached

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requirement coincides with the time period for reply to this
Office action.

Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to the group receptionist whose telephone number is 703-308-1782.

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is 703/305-3431.



David E. Graybill
Primary Examiner
Art Unit 2827

D.G.
21-Feb-02